IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application.

1. (previously presented) A method of generating an enhanced acoustic transmission signal, the method comprising:

generating a carrier signal;

receiving data and generating a data signal representing the data;

modulating the carrier signal with the data signal to form a modulated carrier signal at a carrier frequency;

generating a masking signal to mask the modulated carrier signal from being audible by a human ear;

receiving audio and generating an audio signal based on the audio;

removing a frequency band surrounding the carrier frequency from the audio signal; and

combining the modulated carrier signal, the masking signal, and the audio signal to form the enhanced acoustic transmission signal.

2. (original) The method according to claim 1, wherein the carrier signal is a sine wave.

3. (original) The method according to claim 2, wherein the modulated carrier signal is a pulsed sine wave.

4. (original) The method according to claim 1, wherein the masking signal is narrowband random noise.

5. (original) The system according to claim 1, wherein the modulated carrier signal is at a level that is detectable by a decoding system while still being masked by the masking signal.

6. (original) The system according to claim 1, wherein the masking signal has a bandwidth less than one critical band of the modulated carrier signal.

7. (original) A method of decoding an enhanced acoustic transmission signal including a modulated carrier signal formed by modulating a carrier signal at a carrier frequency with a data signal representing data, a masking signal adapted to mask the modulated carrier signal from being audible by a human ear, and an audio signal modified so that a frequency band surrounding the carrier frequency is removed from the audio signal, the method comprising:

receiving the enhanced acoustic transmission signal;

filtering the enhanced acoustic transmission signal to isolate the modulated carrier signal from the masking signal and the audio signal of the enhanced acoustic transmission signal;

demodulating the modulated carrier signal to extract the data signal from the modulated carrier signal; and

decoding the data signal to extract the data.

8. (original) The method according to claim 7, wherein the modulated carrier signal is isolated from the masking signal by using a finite impulse response (FIR) filter.

9. (previously presented) A system to generate an enhanced acoustic transmission signal, the system comprising:

a carrier signal generator to generate a carrier signal;

a data signal generator to receive data and to generate a data signal representing the data;

a signal modulator to modulate the carrier signal with the data signal to form a modulated carrier signal at a carrier frequency;

a masking signal generator to generate a masking signal to mask the modulated carrier signal from being audible by a human ear;

an audio input device to receive audio and to generate an audio signal based on the audio;

a notch filter to remove a frequency band surrounding the carrier frequency from the audio signal; and

a signal adder to combine the modulated carrier signal, the masking signal, and the audio signal to form the enhanced acoustic transmission signal.

10. (original) The system according to claim 9, wherein the carrier signal generator is a sine wave generator that generates a sine wave.

11. (original) The system according to claim 10, wherein the modulated carrier signal is a pulsed sine wave.

12. (original) The system according to claim 9, wherein the masking signal generator is a narrowband random noise generator to generate narrowband random noise.

13. (original) The system according to claim 9, wherein the modulated carrier signal is at a level that is detectable by a decoding system while still being masked by the masking signal.

14. (original) The system according to claim 9, wherein the system is a telephone system having a microphone connected to the audio input device to receive audio, and a data input device connected to the data signal generator to enter data into the system.

15. (original) The system according to claim 9, wherein the masking signal has a bandwidth less than one critical band of the modulated carrier signal.

16. (original) The system according to claim 9, wherein the modulated carrier signal and the masking signal are first combined to form a masked encoded signal, then the audio signal is combined with the masked encoded signal to form the enhanced acoustic transmission signal.

17. (original) The system according to claim 9, wherein the modulated carrier signal, the masking signal, and the audio signal are combined simultaneously to form the enhanced acoustic transmission signal.

18. (original) A system to decode an enhanced acoustic transmission signal including a modulated carrier signal formed by modulating a carrier signal at a carrier frequency with a data signal representing data, a masking signal adapted to mask the modulated carrier signal from being audible by a human ear, and an audio signal modified so that a frequency band surrounding the carrier frequency is removed from the audio signal, the system comprising:

a receiver to receive the enhanced acoustic transmission signal;

a filter to filter the enhanced acoustic transmission signal to isolate the modulated carrier signal from the masking signal and the audio signal of the enhanced acoustic transmission signal;

a demodulator to demodulate the modulated carrier signal to extract the data signal from the modulated carrier signal; and

a decoder to decode the data signal to extract the data.

19. (original) The system according to claim 18, wherein the modulated carrier signal is isolated from the masking signal by using a finite impulse response (FIR) filter.

20. (original) The system according to claim 18, wherein the system is a telephone system having a speaker to produce audio from the audio signal, and a display to show the data extracted from the modulated carrier signal.

21-29. (canceled)

30. (currently amended) A method to generate an output audio signal, comprising:

removing a range of frequencies in an audio signal to produce a notched audio signal;

generating a masking signal that falls ~~in~~ entirely within one portion of the range of frequencies;

generating a data signal that falls ~~in~~ entirely within the range of frequencies and apart from the one portion; and

combining the notched audio signal, the masking signal, and the data signal to form the output audio signal.

31. (previously presented) The method of claim 30, further comprising:

transmitting the output audio signal.

32. (previously presented) The method of claim 30, wherein the masking signal falls within a critical band of the data signal.

33. (previously presented) The method of claim 30, wherein the generating a data signal includes:

modulating data with a carrier signal in the range of frequencies and apart from the one portion.

34. (previously presented) A method of processing a combined audio signal, comprising:

receiving the combined audio signal including a masking signal residing in a frequency range, a data signal residing in the frequency range, and audio information residing outside the frequency range;

separating the masking signal and the data signal in the frequency range from the audio information outside the frequency range; and

filtering the data signal in the frequency range from the masking signal.

35. (previously presented) The method of claim 34, wherein the masking signal resides in a first portion of the frequency range that is distinct from a second portion of the frequency range in which the data signal resides.

36. (previously presented) The method of claim 34, further comprising:

decoding or demodulating the data signal after the filtering to extract data from the data signal.